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(56) Documents Cited
GB 2285929 A **GB 2270000 A** **GB 2156679 A**
GB 2143131 A **EP 0228537 A2** **EP 0181053 A2**
EP 0104793 A1 **EP 0084019 A1** **EP 0042889 A1**
WO 85/00293 A1 **US 4989604 A**

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(54) **Magnetotherapy apparatus**

(57) Magnetotherapy apparatus has a housing 1 and a remote pad 2 linked by a lead 3. The housing 1 holds a battery-powered timing circuit for generating a timing pulse selectable to one of several discrete predetermined frequencies (2-20 Hz) using selector switches 12. The output of the timing circuit drives a coil in pad 2, which is held in use near the area to be treated. The pad 2 may comprise photon platinum fibre which produces infra-red radiation.

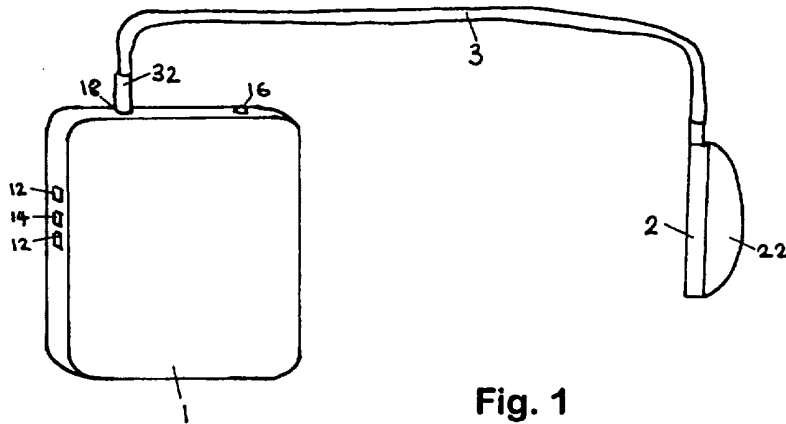
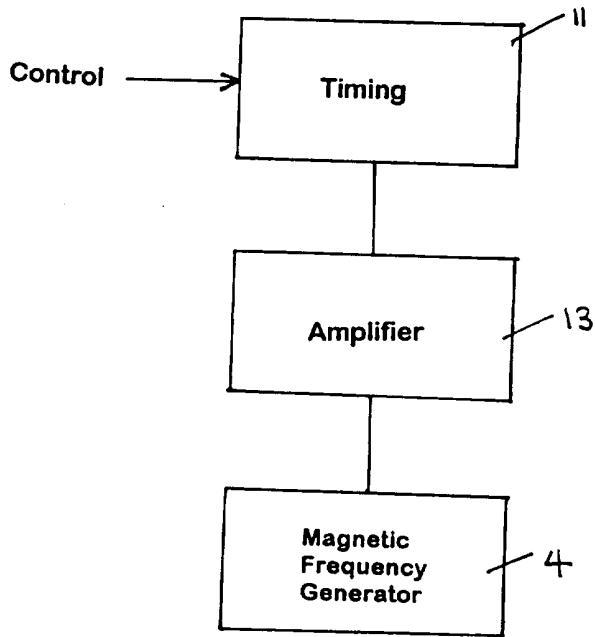
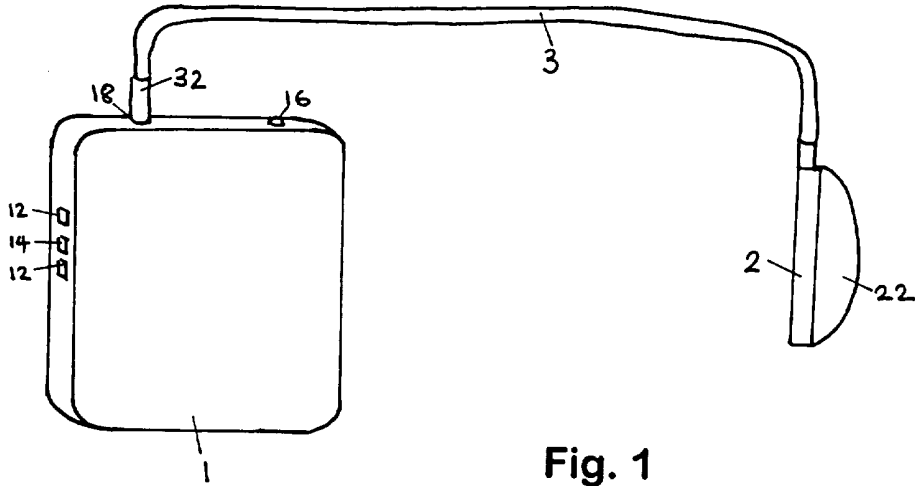


Fig. 1

GB 2 304 287 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995



MAGNOTHERAPY APPARATUS

The present invention relates to a apparatus suitable for use, in particular but not exclusively, in magnotherapy and related fields.

Magnotherapy, also called magnetotherapy or magnetic field therapy, involves subjecting a biological organism to a magnetic field, which is believed to produce a number of therapeutic effects.

It is believed that there exists a natural pulsating electromagnetic field of around 10 Hz (cycles per second) created between the ionosphere and the earth. This phenomenon (known as Schumann resonance) is believed to function as a biological clock of around 7.8 to 10 Hz. Organisms subjected to prolonged periods of frequencies above 10 Hz may become "de-synchronized".

"Magnetic pollution" is a relatively recently recognised problem believed to be associated with electromagnetic radiation from electric lights, televisions, radios, microwave ovens and the like at frequencies outside the 7.8 to 10 Hz range. Most commonly, magnetic pollution arises at mains electricity frequencies of around 50 Hz.

A wide range of apparatus for use in magnotherapy is available. Such apparatus often comprise one or more permanent magnets. Examples are a mattress having permanent magnets embedded therein or a magnetised inner sole for shoes. In some known apparatus an electrical power source is used to drive a coil to produce a magnetic field, which is then used for therapeutic effect.

Problems arise with prior art apparatus used in magnotherapy. Permanent magnets have a relatively weak magnetic field which is roughly proportional to their size. Thus, a small, conveniently sized magnet is often very weak. A stronger magnetic field can be achieved with a mains operated magnetic field generator, but at the expense of reduced portability. Further, such mains operated apparatus tends to be heavy, bulky and expensive.

According to the present invention there is provided a magnetotherapy apparatus comprising:

timing means for producing a timing pulse; and
magnetic field generating means for generating a pulsed magnetic field in response to said timing pulse.

In the preferred embodiment, the timing means produces a regular pulse of variable or discretely selectable frequency within a range of preferably about 2 to 20 Hz.

The magnetic field generating means may be of any suitable type but is preferably a coil. The apparatus may further comprise an amplifier for receiving said timing pulse and driving said magnetic field generating means.

In the preferred embodiment, the apparatus is driven by a direct current power source, preferably a battery. The power source, the timing means and associated circuitry can be located within a housing with a remote magnetic field generating means linked by, for example, a wire. This allows the housing to be located in a convenient position whilst the magnetic field generating means is operatively located in the vicinity of an area to be treated.

A preferred embodiment of the present invention will now be described in detail with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of the apparatus; and
Fig. 2 is a schematic circuit diagram.

The apparatus shown in Fig. 1 comprises a housing 1 and a remote pad 2 linked by a lead 3.

Inside the housing is located a battery power source and control circuitry. External to the housing are selector switches 12, display window 14 and indicator 16.

The control circuitry includes a timing circuit for generating a timing pulse. The frequency of the timing pulse is selectable to one of several discrete predetermined frequencies using selector switches 12. The current selection is displayed in display 14. In the preferred embodiment, there are ten settings corresponding to frequencies of 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20 Hz, respectively.

Indicator 16 in the form of an LED is driven by the control circuitry to show active operation of the apparatus and preferably flashes in relation to the selected frequency. If indicator 16 remains unlit, this can alert a user to non-operation of the apparatus, e.g. due to a flat battery.

Also provided in the top of housing 1 is a receptor 18 for receiving a probe 32 of lead 3. Insertion of probe 32 into receptor 18 activates the control circuitry.

Housing 1 may be conveniently located in a pocket or pouch. A pouch (not shown) is provided having cut-outs for the external features of housing 1. In use, the pouch can be used to locate the housing on a belt or harness. The pouch also provides stowage for the pad 2 and lead 3 when not in use.

Pad 2 comprises a coil and a support member for supporting the coil in use near the area to be treated. Pad 2 may be held against a body manually or, for example, by using a bandage.

The support member may be planar and circular, and arranged in use between the coil and a body to be treated. In the embodiment, pad 2 is constructed from a rigid fibre material known as "photon platinum" available from Nikken Europa UK Limited.

Pad 2 is covered with a protective outer layer 22, such as nylon material, and is in the region of 44mm in diameter and around 18mm thick in total.

The apparatus is small, light weight, inexpensive, compact and portable. A further advantage is that the frequency of the pulsed magnetic field is variable within a predetermined range and may be adjusted according to the ailment to be treated.

Fig. 2 shows a schematic representation of the circuit of the present invention. Timing circuit 11 and amplifier 13 form the control circuitry located in housing 1 and the magnetic field generator 4 is located in pad 2. In the preferred embodiment, timing circuit 11 produces a 5 milli-second pulse between two and twenty times a second (2-20 Hz).

The preferred method of treatment using, for example, the magnetotherapy apparatus of the present to produce a pulsed electromagnetic field involves treatment for 15 to 30 minutes 3 times a day. The preferred settings and frequencies for various ailments are set out below:

Treatment for	Settings	Frequency	Application area
Arthritis, rheumatism	8-9	18-20	Locally & back of head
Bladder complaints	4-7	10-16	Area of pain
Bronchial asthma	7-9	16-18	Lower chest & neck
Chronic bronchitis	5-6	12-14	Upper chest & neck
Colds, catarrh, sinusitis	5-8	12-18	Forehead, chest locally
Constipation	5-6	12-16	Abdomen
Contusions (bruises)	5-8	12-18	Area of bruising
Depression	8-9	18-20	Temple and back of neck
Ear complaints	4-5	10-12	Area of pain
Eczema	4-5	10-12	Locally
Fatigue	5-8	12-18	Lower chest/neck/head
Fractures	5-8	12-18	Site of fracture
Hay Fever	5-8	12-18	Neck
Headache	0-3	2-8	Neck and point of pain
High blood pressure	0-3	2-8	Lower chest
Hypertension	4-5	10-12	Head and neck
Inflammation	0-3	2-8	Point of pain
Itching	0-3	2-8	Area of irritation
Low blood pressure	7-9	16-20	Neck and lower back
Male Impotence	8-9	18-20	Genital area
Menopause	0-3	2-8	Lower Abdomen
Menstrual pain	0-3	2-8	Lower Abdomen
Migraine/acute pains	0-3	2-8	Neck & point of pain
M.S.	4-6	10-14	Locally
Neck pain	0-3	2-8	Point of pain
Neuralgia	4-5	10-12	Lower chest & neck
Poor blood circulation	8-9	18-20	Locally
Sciatica, scar pain	8-9	18-20	Lower chest & pain area
Stomach problems	4-6	10-14	Abdomen
Stress	0-3	2-8	Neck & temple
Travel sickness	0-3	2-8	Stomach and neck

Settings up to 3 are soothing and calming. From 4 they are stimulating and stabilising.

Setting	0	1	2	3	4	5	6	7	8	9
Frequency (Hz)	2	4	6	8	10	12	14	16	18	20

The pulsed magnetic field of the present apparatus enhances performance of the photon platinum of pad 2. The photon platinum produces a "vital ray" of infrared radiation with a wavelength of between 4 and 14 μm . The penetration into a body of the infrared photon rays produced by the photon platinum is enhanced. Thus, the present apparatus enhances the performance of the photon platinum of pad 2, i.e. there is a beneficial combination.

CLAIMS

1. An apparatus for use in magnetotherapy, comprising: timing means for producing a timing pulse; and magnetic field generating means for generating a pulsed magnetic field in response to said timing pulse.
2. An apparatus as in claim 1, wherein said timing means produces a regular pulse within a range of about 2 to 20 Hz.
3. An apparatus as in claim 2, having discretely selectable settings corresponding to frequencies of about 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20 Hz, respectively.
4. An apparatus as in any preceding claim, wherein each pulse of said magnetic field is about 5 milli-seconds in duration.
5. An apparatus as any preceding claim, having a housing for said timing means, a pad comprising said magnetic field generating means, and electrical coupling means therebetween.
6. An apparatus as claimed in claim 5, wherein said housing is operatively wearable or locatable on a patient in a convenient position whilst said pad is operatively located in the vicinity of an area to be treated.
7. An apparatus as in claim 5 or 6, wherein said magnetic field generating means is a coil.
8. An apparatus as in claim 7, wherein said pad comprises said coil and a support member for supporting the coil in use near the area to be treated.
9. An apparatus as in claim 8, wherein the pad is

operatively held against an area to be treated, manually, by clothing, or by using a bandage.

10. An apparatus as in claim 8 or 9, wherein said support member is substantially planar and circular, and arranged in use between the coil and an area to be treated.

11. An apparatus as in claim 10, wherein said support member comprises photon platinum rigid fibre material.

12. An apparatus as in claim 11, wherein said pad is covered with a protective outer layer, such as nylon material.

13. An apparatus as in any preceding claim, further comprising an amplifier for receiving said timing pulse and driving said coil.

14. An apparatus as in any preceding claim, driven by a direct current power source, preferably a battery.

15. An apparatus substantially as hereinbefore described with reference to the accompanying drawings.



Application No: GB 9516923.1
Claims searched: 1-15

Examiner: David Brunt
Date of search: 11 November 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.O): A5R (RHFMX, RHXT)
Int CI (Ed.6): A61N (2/00, 2/02, 2/04)
Other: Online: EDOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2285929 A (NIHON) see page 6 lines 8-17	11
X,Y	GB 2270000 A (GRACE) see p.3 line 20 - p.4 line 5	X:1-3,14 Y:11
X,Y	GB 2156679 A (WALPOLE) see p.1 lines 66-80 and 123-128	X:1-3,9, 13,14 Y:11
X,Y	GB 2143131 A (HASHIMOTO) see p.2 lines 70-72	X:1,2 Y:11
Y	EP 0228537 A2 (ELEC SYSTEM) see column 3 lines 1-10	Y:11
X,Y	EP 0181053 A2 (IRT) see p.5 line 19 - p.6 line 4	X:1,2,4,13 Y:11
X,Y	EP 0104793 A1 (ELECTRO-BIOLOGY) see p.6 lines 6-16	X:1,5-10, 12,14 Y:11
X,Y	EP 0084019 A1 (LKH) see p.6 (claim 1)	X:1,2, 13,14 Y:11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



Application No: GB 9516923.1
Claims searched: 1-15

Examiner: David Brunt
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Category	Identity of document and relevant passage	Relevant to claims
X, Y	EP 0042889 A1 (ELECTRO-BIOLOGY) see p.8 line 22 - p.12 line 10 and page 14 lines 15-17	X:1,2,5-10,12,14 Y:11
X, Y	WO 85/00293 A1 (ELECTRO-BIOLOGY) see p.6 lines 1-14	X:1,2,5-9 Y:11
X, Y	US 4989604 (FANG) see column 4 lines 59-64	X:1,2,3,14 Y:11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.